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ABSTRACT

This research deals with the development and relative importance of both the conceptual-cognitive and the aesthetic-affective aspect of the perceptual process at various age levels of children. Three tasks were chosen: (1) sorting drawings of human figures--a task that represents a more conceptual function; (2) expressing preferences for those same drawings--a task that represents a more aesthetic-affective function; and (3) drawing a person--a task that may have both conceptual and affective aspects on theoretical grounds. Combining the drawings of the human figure consisting of several levels of complexity and Gestalt quality, and then comparing the results of sorting and preference for such drawings by children to their own drawings enables one to examine the contribution of the two dimensions in the three tasks. The subjects were 229 children, comprised of four groups aged 4, 5, 10, and 13, as well as a special group of artistically gifted 13 year-olds. The findings reveal clear developmental trends which suggest that theories conceptualizing children's drawings as an aesthetic expression are more appropriate for the younger ages (four-five) whereas theories conceptualizing them as a cognitive expression may be more appropriate for the older age groups. (Author)

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Perception and Production of the Human Figure in Drawings by Children

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The present research deals with the development of conceptual and aesthetic perception which represents two basic aspects of the perceptual process: the cognitive aspect and the affective one.

Thus, the conceptual-cognitive aspect is seen as associated with information-processing by means of identifying, sorting, and classifying objects which mental activities are basic to conceptualization (Bourne, 1966).

The aesthetic-affective aspect is related to the hedonistic value of the objects and refers to the satisfaction, pleasantness or interest which they evoke (Berlyne, 1971).

These two aspects are, however, interrelated as their relative importance is a function of age: as the child gets older, the importance of color or texture which belongs to the aesthetic-affective domain decreases (Suchman, 1966; Gliner et al., 1969), while the importance of shape (i.e., the contours and the details that define the object) which belongs to the conceptual-cognitive domain increases.

The interrelation of these two aspects is clearly seen in children's drawings, and theories accounting for the development of drawing have assigned differential weights to each of them.

The conceptual theory sees the drawing as reflecting the child's knowledge of the object drawn: the more knowledge he has, the more his drawings resemble reality, the main characteristic of which is complexity (Goodenough, 1926; Harris, 1963).

On the other hand, aesthetic theory emphasizes the child's perception of the general form or Gestalt of the object (Arnheim, 1954; Kellogg, 1970). The child tends towards a good Gestalt, the main characteristics of which are symmetry and closure (Koffka, 1935).

The present study deals with the issue of the relative importance of the conceptual-cognitive aspect versus the aesthetic-affective aspect at various age levels.

In order to throw light on this issue, we chose the tasks of:

(1) sorting drawings of human figures which task represents a more conceptual function;

(2) expressing preferences for the same drawings as representing a more aesthetic-affective function; and

(3) drawing a person which task may have both conceptual and affective aspects on theoretical grounds as mentioned above.

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According to the aesthetic theory, the child's own drawing should reflect the aesthetic aspect and, therefore, the child should emphasize the Gestalt both in his own drawings and in his preference for drawings of others. However, as regards the sorting of drawings, the child may emphasize reality as defined by complexity from the moment he is able to form a concept of the human figure.

On the other hand, the conceptual theory would see reality as the basic aspect and, therefore, the child should emphasize complexity not only in sorting the drawings, but also in his own drawings and in his preferences for those made by others.

By combining drawings of the human figure consisting of several levels of complexity and Gestalt quality, and by comparing the results of sorting and preference for such drawings by children to their own drawings, one may examine the contribution of the two dimensions in the three tasks. There is a dominant tendency for affective aspects in the sorting and preference of little children while older ones show a tendency towards cognitive aspects (Itskowitz, 1971). One may therefore expect a similar tendency in the perception and production of the human figure drawing. Should this be the case, then it may be said that the aesthetic theory is more applicable to younger children while the conceptual theory is more applicable to older ones.

There is a strong tendency for the dominance of the cognitive aspect in children aged 9-10 (Piaget, 1950), a fact which is reflected in an increase of details in drawing and a closer approximation to realistic forms. Around the age of 13, a sensitivity to aesthetic quality emerges. Children of this age may be divided into two groups, those who draw more realistically emphasizing proper proportions (conceptual theory), and those who are more creative and are excited by sensations of form and color, and draw schematic drawings that are independent of conceptual thinking (aesthetic theory). It may be assumed that the latter would prefer drawings which emphasize abstract form and good Gestalt. Such a group would help clarify the changes occurring with increasing age, as well as the theoretical issues pertaining to human figure drawings.

In the light of this background, it was hypothesized that in regard to drawing, increase in age will be associated with decrease in quality of Gestalt and increase in complexity. However, drawings produced by artistically talented children will be of better Gestalt quality and less complex as compared to those of their peers.

With regard to sorting, it was hypothesized that four-year-olds will be directed more by Gestalt than by complexity whereas the reverse will be true for children above this age.

Regarding preference, it was hypothesized that four- and five-year-olds, as well as the thirteen-year-olds who are artistically gifted, will indicate more pref-

erence for Gestalt quality than for complexity. With increasing age, however, preference will be relatively more directed by complexity.

Method

Subjects

The subjects were 229 children, comprised of four groups aged four, five, ten, and thirteen, as well as a special group of artistically gifted thirteen-year-olds.

Construction of Human Figure Drawings

Nine human figure drawings were prepared for the test so that they included the three levels of complexity and Gestalt quality as described in Table 1.

Table 1

Grading of Nine Human Figure Drawings

Gestalt / Complexity	Less Good Gestalt	Good Gestalt	Very Good Gestalt
Very Complex	1 C	2 C	3 C
Complex	1 B	2 B	3 B
Simple	1 A	2 A	3 A

Procedure

The research was carried out in three stages: (1) Each child was asked to draw a human figure, following which (2) the nine human figure drawings were presented in all possible pairs of combinations of the two dimensions, 36 pairs altogether. The Ss were asked to sort the drawings in terms of their similarity to one another: similar, somewhat similar, and very similar. (3) The final stage required the expression of preference for one member of the same pairs on the basis of aesthetic appreciation.

Results

1. Drawing

Two judges evaluated all the children's drawings according to a table containing the pictures of the nine human figure drawings with their gradings. Each drawing was graded separately for Gestalt quality and for complexity by the two judges. The final grade for each drawing was the average of the two grades. Correlations

between evaluations were $\underline{r}$ = .77 for Gestalt and $\underline{r}$ = .93 for complexity (Pearson, with a correction by Spearman & Brown). The results were analyzed by a one-way analysis of variance for Gestalt and complexity separately, and are presented in Tables 2 and 3.

Table 2

Analysis of Variance for Gestalt

Source	Sum of Squares	df	Variance Estimate	F
Between Groups	18.56	4	4.64	6.11***
Within	171.21	224	0.76	
Total	189.77	228		

***p < .001

Table 3

Analysis of Variance for Complexity

Source	Sum of Squares	df	Variance Estimate	F
Between Groups	93.02	4	23.26	31.76***
Within	162.56	224	0.73	
Total	225.58	228		

***p < .001

The results support the hypothesis, i.e., as age increased, the quality of Gestalt decreased and complexity increased significantly.

To examine the difference between the Gestalt quality in the drawings of the 13-year-olds and those of the artistically gifted children of the same age, a contrast calculation was made (Schaffe), and contrary to prediction no significant difference was found: $F_1 = 0.32$, df = 224, $p > .05$.

Again, contrary to prediction, no difference at all was found between these two groups as regards complexity.

2. Sorting

Hypotheses relevant to sorting were tested by means of the Multidimensional Scaling (MDS). This is a method of scaling by which judged similarities of stimuli are transferred into points on a diagram so that the distance between two points corresponds to the psychological distance attached to them, e.g., the more similar

the stimuli are judged, the closer the points are on the diagram (Torgerson, 1958).

The use of the MDS in this research should enable us to tell the relative importance of the two dimensions that were used while judging similarities (the sorting task) by detecting the character of points that are grouped together. As seen in Diagram 1, at all age levels the distance between the points are due to complexity

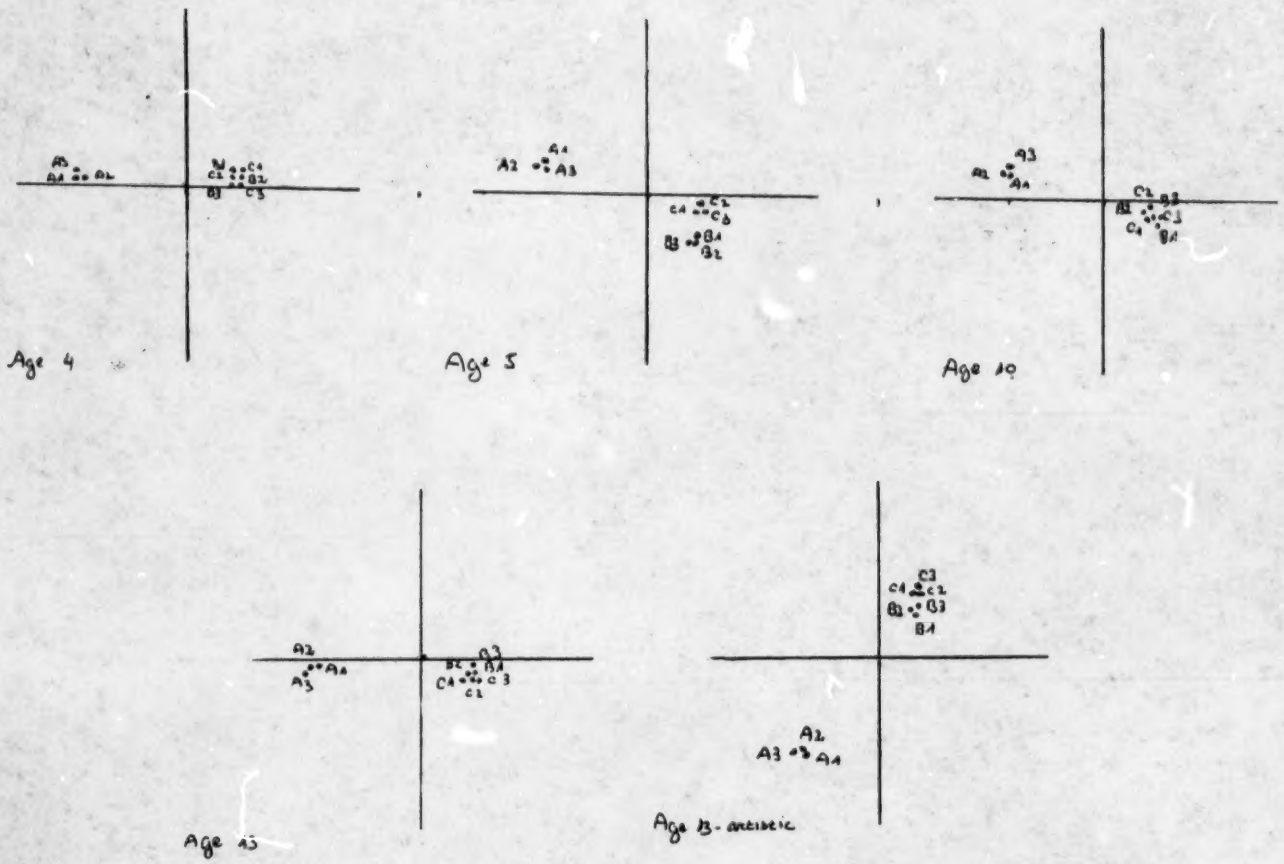

Diagram 1: MDS configurations for similarity judgments for all age groups.

which was the relatively more important dimension used by the children.* This confirms the hypothesis for all the groups except for the four-year-olds. However, by calculations of χ^2 for pairs of stimuli that differed in Gestalt only, it was found that among those children who at times did use the Gestalt quality while sorting, the frequency of such judgments made by the four-year-olds was significantly higher as compared to those made by older children: $\chi^2 = 13.1$, df = 1, $p < .001$. Contrary to the hypothesis it was found that artistically inclined children used the Gestalt for sorting more often than their peers: $\chi^2 = 18.8$, df = 1, $p < .001$.

*The fact that there are only two distinct groups of points although there were 3 levels of complexity is due to some limitation of the small number of drawings and could not be explained here.

3. Preferance

The hypotheses regarding preference were tested by means of the Multidimensional Scaling for Preferences (MDPREF). This is a method by which stimuli and subjects as represented by points are so mapped on a diagram that the closer the point representing a subject is to a point representing a stimulus, the more the latter is preferred by the subject. A small distance between two subject points reflects similarity in their preferences, and a small distance between two stimuli points reflects similar preference attached to them by the subjects.

One can tell the relative importance of the dimensions that were used while indicating preference by detecting the character of points that are grouped together. The method also enables one to detect individual differences (Chang & Carroll).

As seen in Diagram 2, in the configuration of the 4-year-olds, there are many

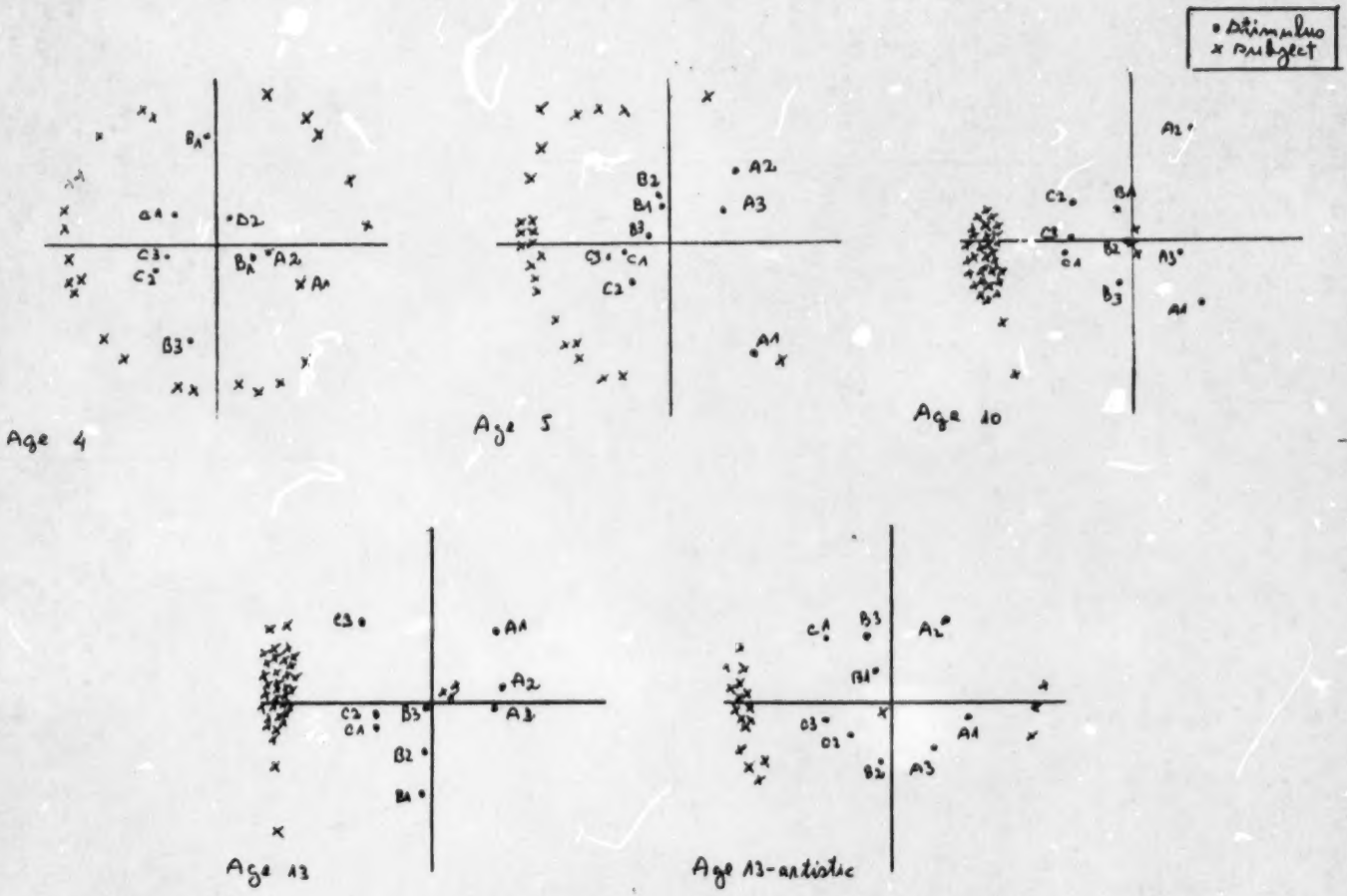

Diagram 2: MDPREF configurations for preference for all age groups.

individual differences; some of the children attribute relatively greater importance to complexity while others to Gestalt. Points representing the subjects on both ends of the horizontal axis are for complexity, while on the vertical they are for Gestalt.

This may be seen by the dispersion of the stimulus points and is more outstanding with the higher ages. As seen in the configuration of the 5-year-olds, the individual differences begin to diminish, and the group of points that is on the left of the configuration represents those who prefer the highest complexity. Apparently, four- and five-year-olds attach relative importance to both complexity and Gestalt so the hypothesis regarding preference is only partly confirmed for those ages. In the configuration of the 10- and 13-year-olds, a further diminishing of individual differences can be seen, and as hypothesized most children attributed relatively greater importance to complexity. However, and only partly according to the hypothesis, most of the artistically gifted children attached importance to both complexity and Gestalt, complexity being relatively more important.

In a separate calculation of χ^2 for pairs of stimuli that differ only in complexity, it was found that with the increase of age the frequency of preference for complexity also goes up: $\chi^2 = 67.7$, $df = 4$, $p < .001$, with the exception of the artistically gifted children who, according to the hypothesis, preferred significantly less complex stimuli than their peers: $\chi^2 = 40.5$, $df = 1$, $p < .001$.

Contrary to predictions, no difference was found between the ten- and the thirteen-year-olds: $\chi^2 = .07$, $df = 1$, $p > .05$.

In a separate calculation of χ^2 for pairs of stimuli varying in Gestalt quality only, it was found in support of the hypothesis that on the lower levels of complexity, preference for good Gestalt increases with age: $\chi^2 = 19.72$, $df = 4$, $p < .001$, with artistically gifted children preferring better Gestalt than their peers: $\chi^2 = 4.5$, $df = 1$, $p < .05$.*

Discussion

There is a connection between the tasks representing the three areas, cognitive, affective, and expressive, with a changing of the relative importance of the dimensions of Gestalt and complexity in each of them according to age.

As expected, the aesthetic theory is applicable to 4-year-olds at which age there is a closer relationship between preference and drawing, both being good Gestalt. Inasmuch as the results of sorting show that the child has a clear conception of the subject, the drawing that is less complex and of good Gestalt represents his perception rather than his knowledge of the object. These findings support Kellogg's (1970) assumption of the existence of various mental images for drawing and for conceptualization of the child whose drawing could, but not necessarily must reflect his concept of people.

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*On the level of higher complexity, the results are very complex and will not be presented here.

There is a similarity in the relationship between sorting and preference of four-year-olds and those of artistic talent in that the affective element in their perception of stimuli is relatively high. This similarity was not found in their drawings. This fact is apparently due to these children's need to conform to what they feel are the demands of their environment. They criticized their work loudly, expressing their doubts as to how the quality of their drawing and taste would be accepted by the others.

Overall, one cannot relate the aesthetic theory to the artistically inclined children, but nevertheless the important fact is that they differ somewhat from their peers and resemble the 4-year-olds; so, it can be said that there is a different quality in their perception.

Comparing the three functions, at the age of 5 one can see a transition to more complex drawings but still good Gestalt, sorting which is similar to that of the 10- and 13-year-olds, and preference which is similar to that of the four-year-olds. Because of the difference in the results of sorting which represents a cognitive function and preference which represents an affective function and that of drawing, one can see that the aesthetic theory is suitable for this age.

Over the age of five, the transition to a dominance of the cognitive functions is clear. However, it is an important fact that drawings of the 10-year-old children were less complex than those of the 13-year-olds despite the fact that in sorting and in preference, there is hardly any difference between the groups. According to Goodenough and Harris, one may attribute the difference between the age groups to development, but that does not explain the difference between drawing, and sorting and preference. In the light of these results, one may speak not of greater knowledge but of its emphasis by older children. The 13-year-old children had worked twice as long as the 10-year-olds trying to produce perfect drawings.

The difficulties in isolating environmental variables--a point well-demonstrated in the case of the artistically inclined subjects--are evident.

However, the findings reveal clear developmental trends which suggest that theories conceptualizing children's drawings as an aesthetic expression are more appropriate for the younger ages (4-5) whereas theories conceptualizing them as a cognitive expression may be more appropriate for the older age groups.

References

Arnheim, R. Art and the visual perception. A psychology of the creative eye. Berkeley and Los Angeles: University of California Press, 1965 (1954).

Barron, F. Complexity-simplicity as a personality dimension. Journal of Abnormal Psychology, 1953, 48, 163-172.

References (continued)

Berlyne, D. E. Aesthetics and psychobiology. New York: Appleton-Century-Crofts, 1971.

Bourne, L. E Human conceptual behavior. In J. Deese & L. J. Postman (Eds.), Contemporary topics in experimental psychology. Boston: Allyn and Bacon, 1966.

Chang, J. J., & Carroll, J. D. How to use MDPREF, a computer program for multidimensional analysis of preference data. New Jersey: Bell Laboratories.

Gliner, C. R., Pich, A. P., Pich, H. L., & Hales, J. J. Developmental investigation of visual and haptic preference for shape and texture. Monographs of the Society Research in Child Development, 1969, 34(6).

Goodenough, F. L. Measurements of intelligence by drawings. New York: Harcourt, Brace & World, 1926.

Harris, D. B. Children's drawings as measure of intellectual maturity. New York: Harcourt, Brace & World, 1963.

Itskowitz, R. The relation between age, similarity estimation, and preference for simple visual stimuli. M.A. thesis, Bar-Ilan University, 1971.

Kellogg, R. Analyzing children's art. California: Palo Alto, 1970.

Koffka, K. Principles of Gestalt psychology. New York: Harcourt, Brace & World, 1935.

Piaget, J. The psychology of intelligence. London: Routledge & Kegan Paul, 1950.

Suchman, R. G. Culture differences in children's color and form perception. Journal of Social Psychology, 1966, 70, 3-6.

Torgerson, W. S. Theory and methods of scaling. London: John Wiley and Sons, 1958.